

Appl. No. 10/791,855  
Reply to FINAL Office Action of July 22, 2005  
Amendt. dated September 28, 2005  
Artv. Docket No. AP973US

Amendments to the Specification:

Please replace the paragraph beginning at page 4, line 8 with the following amended paragraph:

-- The width and thickness of the strip may be of the same order of magnitude, which may be especially advantageous when Schottky barriers are to be provided on all four sides of the strip. An advantage of the width and thickness being of the same order of magnitude is that the waveguide, and hence the photodetector, substantially polarization-insensitive. --

Please replace the paragraph beginning at page 7, line 21 with the following amended paragraph:

-- The electrode configuration also comprises electrical contacts 102, 103, 104, 106 connecting to the waveguide 100 on either side. Electrical access to the waveguide is enabled through the contacts 106 on the top of the device, connected to contact portions 103 by vias 104, in the form of trenches running almost the length of the semiconductor body 112 but stopping short at each end. The contact portions 103 are connected to the waveguide 100 by contact fingers 102, as illustrated in Figures 2, 3B and 4. The electrical contacts to the waveguide comprise contacts/electrodes on the top of the device 106 which connect to contacts at the waveguide level 103 through vias 104. The contacts at the waveguide level 103 make contact to the waveguide 100 through optically non-invasive contact fingers 102. The optically non-invasive contact fingers have width,  $w_p$ , of the same order of magnitude as the waveguide width,  $w$ , as shown in Figure 3B, so as not to disrupt the plasmon polariton mode as it propagates along the waveguide. The contact finger length,  $L_p$ , is selected such that the contact portions 103 and vias 104 are positioned away from the plasmon polariton mode propagating along the waveguide 100. The thickness of the contact fingers 102 and the contact portions 103 can be less than or equal to the thickness of the waveguide 100. --

Please replace the paragraph beginning at page 17, line 24 with the following amended paragraph:

-- In order to achieve polarisation insensitive detection, the plasmon-polariton waveguide disclosed in International patent application No. PCT/CA 02/00971, i.e., with width and thickness of the same order of magnitude, could be used as the strip 100. With this waveguide, photo-excited carriers are emitted over the Schottky barriers formed at all four sides of the strip 100, i.e., at the four interfaces between the strip 100 and the surrounding semiconductor material. The theory presented in the previous section can be extended for emission over four barriers. Emission over four barriers results in increased responsivity, albeit at the expense of increased dark current. --

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